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Review

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# Book Reviews

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## **Operational Research and the Social Sciences.**

J. R. LAWRENCE, Editor.

*Tavistock Publications, London, 1966. 669 pp. 115s. 6d.*

In view of the subject matter of this book, which is published by arrangement with the Operational Research Society, we have obtained two reviews. The author of one is primarily concerned with operational research and the author of the other primarily concerned with social science.

The hardened conference goer has learned from experience to approach international operational research conferences with misgiving. He is aware that a number of the papers which he is going to hear will have been written in order to provide their authors with travel tickets to the conference, rather than to reveal advances in science. He is also aware that a number of the papers will have but a tenuous relation with the subject matter of the conference and that there is a great danger that he will be faced with a mass of heterogenous material lacking a common theme.

When, in addition, the conference is not solely on operational research but is devoted to exploring the relationship between it and a contiguous science, the hardened conference goer arrives at the conference with particular misgivings. It is natural therefore that the proceedings of such a conference should be viewed with a certain amount of reserve.

This conference was organized to provide a platform on which a dialogue might take place between the operational research worker and the social scientist. Let us state immediately that there do not seem to be any papers in this volume which have been written solely to provide their authors with an excuse for travel to Cambridge in the autumn. Clearly much of the material is not novel, it is work already written up elsewhere and is presented because at least half the audience will not know of the work in question. One can excuse this. This was not a research conference, but one devoted to exploring two attitudes of mind and it is interesting to compare the sharp differences in view implicit in the papers written by the two camps.

This difference in view is characterized in almost all the papers in the volume. As a scientist, the operational research worker regards model building as central to his craft and he will see a model as a formalized statement of causes and patterns of effect on which the collection and analysis of data have clothed number. The model then is a numerate structure from which the operational research worker will try to deduce the consequences of different decisions measured in terms of the set of organizational goals or values.

The social scientist is also a scientist. He too regards model building as central to his craft. But the operational research worker may get the impression that to the social scientist a model is more a verbal hypothesis around which a Socratic discourse takes place and into which number may occasionally be introduced. The difference probably arises from a conscious awareness by the social scientist of the great complexity of the phenomena which he studies. For the social scientist is studying social beings and he himself is a social being. The operational research worker is studying management decision-making but he himself is not a manager taking decisions. Hence the social scientist may be much more aware of complexity and, perhaps, in this lies his danger. He may be overwhelmed by this complexity and fail to seek for the simplified hypothesis which has to be consistently added to, in order to approximate sufficiently to reality. One feels too that there is sometimes a lack of understanding from the social scientist of what the sweat of routine decision-making is really like, as seen from the manager's side of the desk. One paper chides scientists who have gone over into administration with renegeing on their faith, because they no longer act like nice rational scientists. Surely the reason is more likely to be that they now, perhaps for the first time, see what the problems are.

It is a pity that so many of the papers in the book are concerned with diagnosis rather than cure. One also notices that none of the authors of the conference papers came from the industrial environment. It is, perhaps, a reflection of the

nature of industry and the lack of understanding by management of the underlying implications of social behaviour that no authors have come from that side of the activity.

Most of the papers are written from one bank or other of the stream which separates the operational research worker on the one side from the social scientist on the other. The bridging papers stand out as being ideally suited to this sort of conference. It is invidious to select particular papers out of a group of thirty-four, but one cannot but mention the important papers by Ackoff and by Rapoport, both of which are written from a deep understanding of the field of inquiry on both sides of the stream. It is a pity that more papers of this sort were not included, but this is a reflection of the nature of the activity which the conference volume seeks to cover, rather than any fault in the organizers of the conference themselves.

There are one or two papers which seem to have been dragged in to give an air of mathematical respectability to the whole proceedings. A paper, for example, which purports to be on a social science topic but which, on its second page, is deep in an algorithm for quadratic programming hardly seems to be related to reality. One would be surprised if our knowledge of the social field was such that we knew about quantity and measurement and the basic relations between quantities, for the first step in a paper to be the presentation of a piece of pure mathematics.

The conference proceedings are greatly strengthened and enlightened by being divided into clearly defined main sections on organization and control, social effects of policies and their measurement, conflict resolution and control, and, finally, models, decisions and operational research. This division into main grouping sections gives an opportunity for these sections to be introduced, summarized and linked by contributions, from operational research workers and social scientists, which did not form part of the conference proceedings themselves. These linking commentaries are among the most helpful parts of the volume and one would hope that organizers of other conferences will present the conference proceedings in a similar way. (This, of course, assumes that there is going to be form, structure and coherence in the papers themselves, but without this a conference is hardly worth while anyway.)

But what of the future? Where do we go from here? Clearly we go on from here in the sense of actually trying to work out, *in situ*, the relationship and the mutual help and understanding which these two sciences can give each other, rather than by having another conference to talk about it. What we need is the collaboration between the behavioural scientist and the operational research worker in actual problem-solving. Here one comes to the natural conflict between twin specialisms which are asked to combine. How do they do this? Is one superior to the other? Operational research, itself, has worked out a solution to this collaborative problem, for operational research is a multi-disciplinary study. The fact that engineers work in operational research groups as fully

professional competent scientists does not mean that the operational research worker regards engineering as inferior to operational research. Consequently one would plead for the incorporation and recognition of the behavioural scientist as a disciplinary man in his own right into the operational research team. This reviewer would plead for the acceptance of Professor Ackoff's view, as stated in his paper, in which he discusses this particular problem:

"I have found, when proposing collaboration to behavioural scientists, that they usually respond with, 'Find a problem with a behavioural science component of interest to us, and we'll be glad to collaborate.' This request shows a fundamental misunderstanding of the nature of the 'multi-disciplinarity' of operational research. Operational research does not proceed by dividing a problem into disciplinary components and dishing these out to the appropriate disciplines. Rather it seeks to bring as many disciplines as possible to bear on every aspect of every problem. In operational research, physicists, mathematicians, engineers, philosophers, and others work on economic, physical, behavioural, and other aspects of organizational problems. The behavioural scientist must be willing to work on every problem and on every aspect of each problem. He must be as willing to bring his knowledge and techniques to bear on what he considers to be a problem outside his domain as he is willing to bring them to behavioural problems. It is not by a division of labour that the behavioural sciences and other disciplines can benefit themselves and each other in operational research, it is by labouring on the undivided. Such collaboration will succeed, however, only if the operational researcher becomes more willing than he is now to face and deal with behavioural variables explicitly."

Those who attended the conference will recall its excitements and the cut and thrust of its discussions once the delegates forgot to be polite to each other. This volume is a worthy momento and a valuable medium for the operational research worker to gain a fuller understanding of the approach of the social scientist. The days are past when the operational research scientist could, in H. R. Watkin's phrase, "regard all men as equal and equally unimportant". Our subject has gained another dimension by the publishing of this book. We owe a debt of gratitude to its editor who must have consumed monumental reserves of energy, and patience, in its production. One can give no greater recommendation of this book to operational research workers than to say that, just this once, they ought to be willing even to pay their own money to buy it!

B. H. P. RIVETT

As its editor points out, ". . . the material on which this book is based is extensive and complex" (p. xi). The complexity creates a baffling problem for the reviewer, despite extensive summaries provided at several points in the book. It is intended to be something more than the proceedings of a conference: ". . . a book in its own right, produced by virtue of there having been a

conference, but with a far wider audience in mind" (p. 7). The editor, session sponsors and others have devoted a great deal of effort to provide structure, connective tissue, perspective and bibliography. As a result, it is indeed a book. Yet the multiplicity of subject matter, viewpoints, preoccupations, languages, assumptive systems and intents do not combine into a discernible whole. And that, of course, was the reason for calling the conference in the first place.

The papers are grouped into five topic areas: organization and control, the measurement of social effects of policies, conflict, systems theory, and a miscellaneous group. In addition, five introductory chapters, by J. R. Lawrence, Sir Charles Goodeve, S. L. Cook, W. G. Bennis, and C. W. Churchman in collaboration with F. E. Emery, respectively, give explicit attention to the problems of relationship between operational research and social science. Cook further elaborates this theme in his "Discussion and Commentary" at the end of the *Organization and Control* section. The section on *Systems Theory*, as portrayed in a "Discussion and Commentary" by Tom Burns, again returns to this theme, presumably because systems theory *should* be able to incorporate the activities and findings of diverse specialities.

The rest of the papers can be viewed as "examples" of the kind of research/theoretical work pursued by "representative" scholars. Representative of what? Certainly not of *either* "social science" *or* "operational research". In the first place, the social scientists present would never be selected as representative of all social science. Their interests and methods represent a few narrow bands in the spectrum. Again, a goodly portion of the book lies in territory traditionally occupied by economists, but it is not clear whether an economist is a social scientist, an operational researcher, or neither, or whether operational research workers who do economics are still operational researchers. The notion that there were two fields to be brought together in the conference is not supported by the papers presented: the diversity is great. (However, inasmuch as the conference was organized by the Operational Research Society, it is not surprising that most of the papers are of the type to be found in operational research journals.)

If there was any clear dichotomy in the conference, or in the papers, it could not be characterized as that between social science and operational research, even though the conferees attempted to simplify their situation from time to time by backing into "social science" or "operational research" stereotypes. Ackoff at one point in the conference (p. 546) expressed the belief that the diversity of approaches was linked to personality and personal preference. At the risk of similarly psychologizing, it seems to me that most of the papers could be characterized as biased towards either a mechanistic or a humanistic (organic) approach—with mechanistic being the dominant theme.

The reader will find the book intensely stimulating in at least three ways, and as a whole faintly depressing. The latter feeling crept into some of Kreweras's closing remarks: "The main question to be answered is 'what is a good model?'

. . . we require the model to fit reality. This is the central difficulty, and I have not the slightest hope that we can solve it; it is as though the tailor were on this side of the river and had to make clothes for customers on the other side" (p. 639).

But the stimulation will make the depression bearable. In the first place, the substantive papers are good—some of them excellent. Some are bound to be difficult for the reader, some easy, depending on his own disciplinary background. Secondly, the introductory, linking, commentary and overview chapters are informative and thought-provoking.

Thirdly, reading the entire book—and especially the chapters by the persons who were concerned to make it a book rather than the proceedings of a conference—inevitably stimulates reflection on the sociology of science. The book might have been subtitled *In Quest of Identity*. To whom could each conferee turn as a colleague—a person with whom a large common ground of assumptions and language is shared? Who indeed was his audience? Most of the papers seemed to be addressed to colleagues within the writer's speciality. The linking and overview papers are exceptions: Bennis was trying to explain a branch of applied social science to non-colleagues; Churchman and Emery in effect conducted a dialogue which concluded that "the crux of the difference is the strategic one of the direction from which one may hope to approach the common scientific goal of understanding" (p. 83). The marginality of members of emerging professions to traditional professional groups seems somehow less poignant than the marginality experienced when the members of several emerging professions attempt to reach across the growing barriers, or to find a temporary identity in interdisciplinary groups.

When members of different disciplines are able to join in collaborative problem-solving, new perspectives, new concepts, new methods and techniques emerge. This was the original, exciting insight of Blackett's circus, and this was what failed to materialize at the conference. The applied social scientist has something to say about the dynamics of temporary systems<sup>1</sup>—and the original operational research teams met the conditions for innovative temporary systems. Apparently the conference design did not meet these conditions adequately. Nor has operational research, in becoming a permanent system, been able to maintain its interdisciplinary synergy. Cook comments: "Nowadays operational research groups are considerably younger, having recruited about half their members straight from university; they are more concentrated in disciplines. . . . They have become much more skilled at applying a certain range of techniques to a corresponding range of problems" (p. 23).

It seems a strange irony that modern operational researchers, whose forebears can claim to have been the inventors of creative interdisciplinary teamwork, should now find such gulfs hard to cross. It is equally ironic that applied social scientists, skilled in helping others to build collaborative problem-solving relationships, experience similar difficulty. Why did the conference not produce

the hoped for synergy? Was it the absence of a common task, a project, an operational problem to solve? Was it the absence of a freeing climate such as that provided by the emergency of war, when academic pretensions can be cast aside? Was there any significance in the fact that none of the forty-one presenters serves as either a social science or operational research change agent in his own organization—and that thirty-four of them were from academia? Hard questions to answer: but perhaps questions that a team of applied social scientists and operations researchers might tackle together with some expectation of success.

Reading the book is guaranteed to produce conviction that there is a crying need for synergic relationships between what may roughly be called operations research and applied social science. In his concluding comments, Kreweras remarked on the large number of "prominent scientists devoting several days to questions so closely related to the key problems of modern society" (p. 640). These problems will not be solved by a speciality: their resolution depends upon those of us who are concerned learning to resolve our own problem of working together creatively.

H. A. SHEPARD

#### REFERENCE

<sup>1</sup> M. B. MILES (1964) On temporary systems. In *Innovation in Education*, (M. B. MILES, Ed.), Chapter 19. Teachers' College.

#### Cost Problems in Modern Marketing.

MAX KJAER-HANSEN.

*North-Holland Publishing Co., Amsterdam, 1965. 131 pp. 30s.*

Serious criticism has been levelled at the marketing profession everywhere in Europe. Its members are most often characterized as the "Advertising People", and they are said to squander the wealth of modern society. Whilst this may be true from the macro-economic, national (usually political) viewpoint, there is no doubt that at the level of the individual business marketing expenditure has led to improved profitability. This has, of course, been over a period of expanding consumer demand and it remains to be seen whether the possibilities of creating profitability by means of marketing expenditure will be reduced in the relatively saturated market conditions of a tightened national economic climate. Against this background there seems to be little doubt that the cost problem in marketing will assume a different character during the coming years. From being a problem of minor importance, cost economy in this area may become a matter of life and death for firms engaged in marketing activities.

With this in view a seminar for Danish marketing managers with an understanding of theoretical economics was given, late in 1963, by Max Kjaer-Hansen and his colleagues at the Marketing Institute of the Copenhagen School of Economics and Business Administration. A revised and edited version of the papers, in generally good English, is now available.